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Jamil Omar-Hatem El-Reedy

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BAKER BOTTS L.L.P.

2001 ROSS AVENUE

SUITE 600

DALLAS, TX 75201-2980

EXAMINER

HUGHES, DEANDRA M

ART UNIT

PAPER NUMBER

3663

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Please find below and/or attached an Office communication concerning this application or proceeding.



**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Applicant's amendment filed 11/10/05 has overcome the 112-2<sup>nd</sup> paragraph rejection of claim 17. Consequently, the 112-2<sup>nd</sup> rejection of claim 17 has been withdrawn.

***Response to Arguments***

2. Applicant's arguments filed 11/10/05 have been fully considered but they are not persuasive.

With regard to the 102 rejections over Sato, applicant argues the following:

- (A) "Sato does not disclose, teach or suggest using a stable signal to automatically set the gain of a downstream amplifier." (pg. 9, lines 13-14)
- (B) "Sato does not disclose, teach or suggest including ASE in a stable signal used to automatically set the gain of an amplifier." (pg. 10, lines 1-2)
- (C) "Nowhere does Sato disclose, teach, or suggest communicating power level information of a stable signal to be used to automatically set the gain of the amplifier." (pg. 10, lines 8-9)
- (D) "Nowhere does Sato disclose, teach, or suggest that repeaters have a setup mode or that they can transition into a normal mode. In fact, Sato discloses 'perform[ing] monitor/control operations...on a constant cycle' (Sato, col. 10, lines 31-33; emphasis added)." (pg. 10, lines 16-17)

- (E) “Nowhere does Sato, disclose, teach or suggest transmitting a request for transmission of a stable signal for setting the gain automatically.” (pg. 10, lines 3-5 from bottom)
- (F) “Nowhere does Sato, disclose teach or suggest the use of a signal with approximately 1 dB or less of power variation over time, or signal that is received at a power level of at least approximately -30 dBm.” (pg. 11, lines 7-10). Figure 2 of “Sato merely ‘show[s] a level-diagram used for explaining the operation of the optical transmission system...” Sato col. 2, lines 59-60)
- (G) “...there is nothing in Sato that indicates that an upstream amplifier is notified that the gain of a downstream amplifier has been set.” (pg. 11, lines 17-19)

Argument (A) is not persuasive because the stable signal is the supervisory signal and repeaters are amplifiers.

Argument (B) is not persuasive because as applicant notes, Sato col. 7, lines 54-57 and 61-63 discloses that the “signal quality is estimated on its gain and ASE noise.” The supervisory signal comprises estimation parameters. Included in these estimation parameters is ASE noise (ASE is inherently noise. Further, note that ASE is inherently both counter and co-propagating). The optical filter (col. 6, lines 50-55) is used to remove the ASE propagating upstream, i.e. to prevent backward propagating ASE. The forward propagating ASE remains and is used to determine one of the estimation parameters.

Argument (C) is not persuasive because Sato is replete with references to power level information of the signal to automatically set the gain of the amplifier (e.g. see col. 7, lines 35-41, line 44, line 65; note that propagation loss is power level information.)

Argument (D) is not persuasive because the phrase cited by the applicant supporting Argument (D) pertains to the *workstation and not to the repeaters*, as the applicant suggests. The phrase is reproduced in full below:

“The ***workstation*** (WS) 130 performs monitor/control operations for each estimation parameter in the upward and downward lines 100a and 100b on a constant cycle.” (col. 10, lines 30-33; emphasis added).

Argument (E) is not persuasive because fig. 15 clearly discloses transmission and reception of requests for stable signals. The upward signal is the transmission of the request for the estimation parameters, transmitted via the supervisory signal, and the downward signal is the transmission of the stable signal.

Argument (F) is not persuasive because fig. 2 is not only a diagram illustrating the operation of the system. It clearly illustrates the power variations in ***dBm*** of the system. The power variations disclosed correspond to less than 1 ***dB***. Further, -30 ***dBm*** is merely 0.001mW of power. Power losses of an optical fiber typically fall in the 1 ***dB*** range. Agrawal et al. is transmitted herewith to demonstrate the inherency of this concept.

Argument (G) is not persuasive because fig. 15 discloses that the transmission stable signal propagates through the upstream amplifiers. Each one of these amplifiers receive estimation parameters of the amplifier that precedes it. Consequently, the upstream amplifier is notified that the gain of the downstream amplifier has been set.

With regard to the 102 rejections over Fatehi, applicant argues the following:

- (H) "Nowhere does Fatehi disclose a source at least proximate an upstream amplifier that transmits a stable signal." (pg. 12, lines 16-17).
- (I) "Nowhere does Fatehi disclose the use of a broadband signal." (pg. 12, 3<sup>rd</sup> line from bottom)

Argument (H) is not persuasive because a wavelength of the multiwavelength signal is a stable signal. The INPUT TAP of figure 5 taps off this signal and controls the gain via the AGC. Note that AGC is Automatic Gain Control.

Argument (I) is not persuasive because a multiwavelength signal IS a broadband signal. Consequently, Fatehi discloses the use of a broadband signal.

***Information Disclosure Statement***

- 3. The information disclosure statement (IDS) filed on 11/10/05 has been considered by the examiner.

***Claim Rejections - 35 USC § 102***

- 4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
- 5. Claims 1-6, 8-13, 17-23, and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al. (US 6,229,631 published May 8, 2001).

\*\*The references made herein are done so for the convenience of the applicant. The prior art should be considered in its entirety.

With regard to claims 16-17, Sato discloses a system for automatically setting a gain for an amplifier in an optical network, comprising:

- a source (#10) proximate an upstream amplifier (#12a) coupled to an optical span (#11a-#11c);
- the source configured to to transmit a stable signal over the optical span (supervisory signal; col. 9, line 15);
- a downstream amplifier coupled to the optical span (#12b) ,
- the downstream amplifier configured to to use the stable signal to automatically set a gain of the downstream amplifier (col. 10, lines 5-6; fig. 33) .

With regard to claims 18 and 21-22, col. 7, lines 60-65, discloses ASE and optical powers as estimation parameters for the supervisory signal.

With regard to claims 19-20 and 26, each device communicates with the simulator regarding its mode of operation which includes both power level and gain control (col. 6, lines 25-35).

With regard to claims 23 and 25, fig. 2 discloses the power penalties.

With regard to claim 27, the EDFAs #12a and #12b include laser diode pumps (fig. 35, #184).

Claims 1-6 and 8-13 are merely the method of normal operations of the apparatus as claimed.

6. Claims 1, 7, 16, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Fatehi (US 5,673,142 published Sep. 30,1997).

Note that the ground of rejection is the same as that of the non-final office action. The typographical error noted by the applicant (see Remarks, pg. 11, last paragraph) has been corrected.

With regard to claims 16 and 24, Fatehi discloses a system for automatically setting a gain for an amplifier in an optical network, comprising:

- a broadband source (fig. 5; MULTIWAVELENGTH INPUT SIGNAL) proximate an upstream amplifier (#60) coupled to an optical span (see splices in fig. 2);
- the source configured to transmit a stable signal over the optical span (fig. 2);
- a downstream amplifier coupled to the optical span (#62),
- the downstream amplifier configured to use the stable signal to automatically set a gain of the downstream amplifier (AGC is controlled via signal #500).

Claims 1 and 7 are merely the method of normal operations of the apparatus as claimed.

### ***Claim Rejections - 35 USC § 103***

7. Claims 14-15 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 6,229,631 published May 8, 2001) in view of Lauder (US 2004/0071392 filed Nov. 27, 2001).

With regard to claims 28-29, Sato does not specifically disclose a shutter switch to block optical traffic from reaching the source. However, Lauder teaches the use of a



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optical shutter switch to prevent optical traffic from reaching a source (fig. 4). It would have been obvious to one of ordinary skill (e.g., an optical engineer) in the art at the time the invention was made to use a shutter switch for the advantage of shutting down the system in the event of a system failure.

Claims 14-15 are merely the method of normal operations of the apparatus as claimed.

### ***Allowable Subject Matter***

8. Claim 30 is allowed.

9. The following is a statement of reasons for the indication of allowable subject matter.

The prior art does not teach or make obvious *a stable signal transmitted at a power level such that the signal is received at the downstream amplifier at a power level of at least approximately -30 dBm* in conjunction with the other features of the claim.

This statement is not intended to necessarily state all the reasons for allowance or all the details why the claims are allowed and has not been written to specifically or impliedly state that all the reasons for allowance are set forth (MPEP 1302.14).

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Deandra M Hughes  
Examiner  
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